AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 of 3

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0002	28-Feb-2003	W13G86-2350-3654	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
DEPT. OF THE ARMY N E DISTRICT, CORPS OF ENGINEERS 696 VIRGINIA ROAD CONCORD MA 01742-2751	DACW33	**See Item 6**	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. DACW33-03-B-0005
	X	9B. DATED (SEE ITEM 11) 16-Jan-2003
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

This amendment is issued to make changes to the initial specifications and the bidding schedule. The bid opening date and time remains unchanged as March 18, 2003, 2:00 p.m. EST.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 28-Feb-2003

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

1.1 CHANGES TO ISSUED AMENDMENTS

Amendment No. 0001, dated 10 Feb 03, Item No. 2c: This item stated that high pressure jetting will not be allowed. This was incorrect. High pressure jetting will be allowed in order to remove silt and sediment from around the bottom of the sector gate arc and wheels.

1.2 CHANGES TO SPECIFICATIONS

1.2.1 Revised Sections

The sections listed below are deleted and replaced with revised sections with the same section number as indicated. Changes in the text are indicated by additions and deletions. Added text is identified by underscoring and deleted text is identified by overstrike.

DELETE SECTION:	REPLACE WITH SECTION (DATE):
Section 00800	Section 00800 02/25/03
Section 01110	Section 01110 02/25/03
Section 01270	Section 01270 02/25/03
Section 02170	Section 02170 02/25/03
Section 02490	Section 02490 02/25/03
Section 09965	Section 09965 02/25/03

SECTION 00010 - SOLICITATION CONTRACT FORM

The following changes were made to the bidding schedule (see revised schedule PDF File 00010 posted as a separate document)

CLIN 0008

The CLIN extended description *ABOVE MEAN LOW WATER (MLW) has been added.
The pricing detail quantity has decreased by 5.00 from 10.00 to 5.00.

CLIN 0009

This CLIN has been renumbered to CLIN 0010.
The CLIN description has changed from REPLACE TIMBER FENDER BRACKETS to *REPLACE TIMBER FENDER BRACKETS.
The CLIN extended description ABOVE MEAN LOW WATER (MLW) has been added.
The pricing detail quantity has decreased by 40.00 from 80.00 to 40.00.

CLIN 0010

This CLIN has been renumbered to CLIN 0012.
The CLIN description has changed from CONCRETE AND MISCELLANEOUS REPAIRS to *CONCRETE AND MISCELLANEOUS REPAIRS.

CLIN 0011
This CLIN has been renumbered to CLIN 0013.
The CLIN description has changed from PAINTING OF SECTOR GATES to *PAINTING OF SECTOR GATES.

CLIN 0009 is added as follows:

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009		5	Each		
	*REPLACE TIMBER FENDERS FFP BELOW MEAN LOW WATER (MLW)				
				NET AMT	

CLIN 0011 is added as follows:

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011		40	Each		
	*REPLACE TIMBER FENDER BRACKETS FFP BELOW MEAN LOW WATER				
				NET AMT	

REVISED ENTIRE BIDDING SCHEDULE IS POSTED AS A SEPARATE PDF FILE. SPECIFICATIONS ARE ALSO POSTED AS A SEPARATE PDF FILE.

END OF AMENDMENT 0002

Section 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0001	MOBILIZATION AND DEMOBILIZATION	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0002	INSPECT STOP GATES AND LIFTING BEAMS	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0003	INSTALL STOP GATES AND DEWATER SECTORGATE POCKETS	2	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0004	REHABILITATE WEST SECTOR GATE	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0005	REHABILITATE EAST SECTOR GATE	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0006	JACKING OF SECTOR GATES	2	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0007	REPLACE GATE WHEEL ASSEMBLIES	5	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
0008	REPLACE TIMBER FENDERS *Above Mean Low Water (MLW)	5	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT

*0009	REPLACE TIMBER FENDERS *Below Mean Low Water (MLW)	5	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
*0010	REPLACE TIMBER FENDER BRACKETS *Above Mean Low Water	40	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
*0011	REPLACE TIMBER FENDER BRACKETS *Below Mean Low Water	40	Each	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
*0012	CONCRETE AND MISCELLANEOUS REPAIRS	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
*0013	PAINTING OF SECTOR GATES	1	Lump Sum	$_____	$_____

TOTAL BID AMOUNT $_____

DOCUMENT TABLE OF CONTENTS

DIVISION 00 - DOCUMENTS

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

-- End of Document Table of Contents --

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

1.1 COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK (APR 1984) FAR 52.211-10

The Contractor shall be required to--

(1) commence work under this contract within 15 calendar days after the date the Contractor receives the notice to proceed,

(2) prosecute the work diligently, and

(3) complete the entire work ready for use not later than ~~270~~185 calendar days after the date the Contractor receives notice to proceed. Some items of work are to be completed in shorter durations and during specific time periods within the overall prosecution period. See Subpart "Work Sequence and Scheduling" in Section 01110 SUMMARY OF WORK for a detailed explanation of these specific requirements and limitations. The time stated for completion shall include final cleanup of the premises.

1.2 LIQUIDATED DAMAGES - CONSTRUCTION (Sept 2000) FAR 52.211-12

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $700.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

1.3 TIME EXTENSIONS (Sept 2000) FAR 52.211-13

Time extensions for contract changes will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide that the contract completion date will be extended only for those specific elements related to the changed work and that the remaining contract completion dates for all other portions of the work will not be altered. The change order also may provide an equitable readjustment of liquidated damages under the new completion schedule.

1.4 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000) DFARS 252.236-7001

(a) The Government will provide to the Contractor, without charge, one set

of contract drawings and specifications, except publications incorporated into the technical provisions by reference The drawings will be provided to the Contractor in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall-

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications, and to the contract drawings identified on the following index of drawings:

Sheet No.	Design File	Title
		REPAIR OF SECTOR GATES NEW BEDFORD/FAIRHAVEN HURRICANE BARRIER
1 of 5, G-1	NBFGBS.DGN	TITLE SHEET
2 of 5, G-2	NBFG001.S02	INDEX, NOTES, AND LEGEND
3 of 5, S-1	NBFS501.S03	STRUCTURAL DETAILS AND ELEVATIONS
4 of 5, S-2	NBFS502.S04	STRUCTURAL DETAILS AND PLANS
5 of 5, S-3	NBFS503.S05	STRUCTURAL DETAILS

Information Drawings Accompanying the Specification:

Information drawings are included in the project documents and are identified on an index found on Sheet 2. Information drawings are intended to show the original construction. Drawings are the property of the

Government and shall not be used for any purpose other than that intended by the specifications.

1.5 DESIGNATED BILLING OFFICE

Reference Contract Clause titled "PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS" located in SECTION 00700, CONTRACT CLAUSES. The "designated billing office" will be the Construction Area Engineer, Resident Engineer or project office where the Contracting Officer Representative for this contract is located. The Contractor will be notified of the exact location of this office at the project preconstruction conference specified in Section 01110 SUMMARY OF WORK.

1.6 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (OCT 1989) ER 415-1-15

a. This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE entitled, "DEFAULT (FIXED PRICE CONSTRUCTION)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied.

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS
BASED ON 5 DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN
(9)	(7)	(5)	(3)	(1)	(1)

JUL	AUG	SEP	OCT	NOV	DEC
(1)	(1)	(1)	(2)	(5)	(7)

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated

chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "DEFAULT (FIXED PRICE CONSTRUCTION)."

1.7 INSURANCE REQUIRED

In accordance with CONTRACT CLAUSE titled "INSURANCE - WORK ON A GOVERNMENT INSTALLATION" the Contractor shall procure and maintain during the entire period of his performance under this contract the following kinds and minimum amounts of insurance:

Type	Amount
Workmen's Compensation and Employers' Liability Insurance. The Contractor shall comply with all applicable Workmen's Compensation Statutes and shall furnish evidence of Employers' Liability Insurance.	Not less than $100,000
General Liability Insurance Bodily injury liability insurance on the comprehensive form of policy.	Minimum limits of $500,000 per accident
Automobile Liability Insurance Bodily injury liability and property damage liability insurance on the comprehensive form of policy and shall cover the operation of all automobiles used in performance of the contract.	Minimum limits of $200,000 per person and $500,000 per accident for bodily injury and $20,000 per accident for property damage.

1.8 WARRANTY OF CONSTRUCTION (MAR 1994) FAR 52.246-21 Alternate I

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

(c) The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result

of--

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, workmanship, or design furnished.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

(e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall--

(1) Obtain all warranties that would be given in normal commercial practice;

(2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

(3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

(k) Defects in design or manufacture of equipment specified by the Government on a 'brand name and model' basis, shall not be included in this warranty. In this event, the Contractor shall require any subcontractors, manufacturers, or suppliers thereof to execute their

warranties, in writing, directly to the Government.

1.9 OBSTRUCTION OF NAVIGABLE WATERWAYS DFAR 252.236-7002(DEC 1991)

(a) The Contractor shall-

(1) Promptly recover and remove any material, plant, machinery, or appliance which the contractor loses, dumps, throws overboard, sinks, or misplaces, and which, in the opinion of the Contracting Officer, may be dangerous to or obstruct navigation;

(2) Give immediate notice, with description and locations of any such obstructions, to the Contracting Officer; and

(3) When required by the Contracting Officer, mark or buoy such obstructions until the same are removed.

(b) The Contracting Officer may-

(1) Remove the obstructions by contract or otherwise should the Contractor refuse, neglect, or delay compliance with paragraph (a) of this clause; and

(2) Deduct the cost of removal from any monies due or to become due to the Contractor; or

(3) Recover the cost of removal under the Contractor's bond.

(c) The Contractor's liability for the removal of a vessel wrecked or sunk without fault or negligence is limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et.seq.).

1.10 PAYMENT FOR MOBILIZATION AND DEMOBILIZATION (DEC 1991) DFARS 252.236-7004.

(a) The Government will pay all costs for the mobilization and demobilization of all of the Contractor's plant and equipment at the contract lump sum price for this item.

(1) Sixty percent of the lump sum price upon completion of the Contractor's mobilization at the work site.

(2) The remaining 40 percent upon completion of demobilization.

(b) The Contracting Officer may require the Contractor to furnish cost data to justify this portion of the bid if the Contracting Officer believes that the percentages in paragraphs a(1) and a(2) of this clause do not bear a reasonable relation to the cost of the work in this contract.

(1) Failure to justify such price to the satisfaction of the Contracting Officer will result in payment, as determined by the Contracting Officer, of --

(i) Actual mobilization costs at completion of mobilization;

(ii) Actual demobilization costs at completion of demobilization; and

(iii) The remainder of this item in the final payment under this contract.

(2) The Contracting Officer's determination of the actual costs in paragraph b(1) of this clause is not subject to appeal.

1.11 QUANTITY SURVEYS (APR 1984) ALTERNATE 1 FAR 52.236-16

(a) Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

(b) The Contractor shall conduct the original and final surveys and surveys for any periods for which progress payments are requested. All these surveys shall be conducted under the direction of a representative of the Contracting Officer, unless the Contracting Officer waives this requirement in a specific instance. The Government shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.

(c) Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

-- End of Section Table of Contents --

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

The general description below is given to indicate the approximate scope of this project only. It does not limit the work required under the project drawings and specifications.

The work of this project consists of miscellaneous rehabilitation work on the navigation gates and appurtenances at the New Bedford/Fairhaven Hurricane Barrier. Major work features include installation of stop gates and dewatering of navigation gate pockets, clearing silt, sand, and debris from the base of the gates, jacking of the gates to allow wheel repairs, gate wheel repairs or replacement, repairs to the timber fender system, concrete repairs, painting of steel, and miscellaneous repairs to steel components. Inspection and repair of stop gates is required. Repairs requiring underwater work include cleaning of stop gate guides, metal cutting, welding of metal shapes, painting, and inspections.

1.1.1 Project Site Photographs

Attached at the end of the specification document are photographs showing the approximate existing conditions at the site of the work. These photographs are included for informational purposes only; the Contractor shall verify existing conditions through his own efforts for bidding and construction purposes.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Progress Schedule; G, C.

In accordance with the contract provisions, the Contractor shall, within five (5) days after receipt by him of notice to proceed or as otherwise determined by the Contracting Officer, submit for approval a practicable progress schedule. When changes are authorized that result in contract time extensions, Contractor shall submit a modified chart for approval by the Contracting Officer.

SD-11 Closeout Submittals

Record Drawings; G, E.

Record drawings showing all deviations which have been made from the contract drawings shall be submitted to the Contracting Officer for approval at the completion of work. See paragraph RECORD DRAWINGS for record keeping and submittal requirements.

1.3 PROJECT/SITE CONDITIONS

1.3.1 Obstruction of Channel

The Government will not restrict vessels from the existing channel, except to the extent specified in the specifications and to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army, in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor will be required to conduct the work in such manner as to obstruct navigation as little as possible. In those instances where the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Upon the completion of the work the Contractor shall promptly remove his plant, including ranges, buoys, piles, and other marks placed by him under the contract in navigable water or on the shore.

1.3.2 Channel Traffic

The traffic in New Bedford and Fairhaven Harbor and through the barrier consists of pleasure boats, passenger and dry cargo vessels, tankers, motor vessels and fishing vessels. During the calendar year 1995, the number of trips by vessels with drafts of less than 25 feet in and out of the harbor totaled 12,630 of which, over 98 percent were by vessels with a draft of less than 20 feet. This traffic is not expected to cause unreasonable interference with the work except in the case of large ocean-going tankers and cargo vessels which are almost one half the barrier width.

1.4 WORK HOURS, SEQUENCE AND SCHEDULING

1.4.1 Hours of Operations During Spring and Fall Periods

During the periods of ~~14 March to 11 April and 14 November to 12 December~~20 May 2003 to 9 June 2003, 18 June 2003 to 8 July 2003, 30 September 2003 to 22 October 2003, and 1 November 2003 to 20 November 2003, the Contractor is permitted to perform work at the site 7 days per week and 24 hours per day. The Contractor shall give priority to performing work during daylight hours. These potential work hours have been considered in computing the performance time of this contract.

1.4.2 Hours of Operations During Other Times

Except during time periods identified in subpart "Hours of Operations

During Spring and Fall Periods", work hours are from 7:00 a.m. through ~~4:30~~ 5:00 p.m., Monday through Friday. The Contractor will not be permitted to work on Saturday, Sunday or legal holidays unless otherwise authorized by the Contracting Officer. The exclusion of work on Saturday, Sunday and legal holidays has been considered in computing the performance time of this contract. The following legal holidays are observed:

January 1st
Third Monday in January
Third Monday in February
Last Monday of May
July 4th
1st Monday of September
2nd Monday of October
11th of November
Fourth Thursday of November
25th of December

When one of the above designated legal holidays falls on a Sunday, the following Monday will be observed as a legal holiday. When a legal holiday falls on a Saturday, the preceding Friday is observed as a holiday. Requests to perform work at other times shall be made in writing to the Contracting Officer. Every effort will be made to accommodate such requests.

1.4.3 Work Sequence

1.4.3.1 General

There are certain essential criteria relative to the preparation of a work sequence and time schedule which the Contractor will be required to implement and follow during the prosecution of the work. Minor variations in the sequence of the items of work as specified may be made by the Contractor, provided such variations do not conflict with critical elements of the schedule. Proposed minor variations shall be noted on the progress charts submittal required by CONTRACT CLAUSE, entitled "SCHEDULES FOR CONSTRUCTION CONTRACTS". Variations shall be approved by the Contracting Officer prior to implementation.

1.4.3.2 Progress Schedule

The progress schedule shall be in the form of a chart graphically indicating the sequence proposed to accomplish each work feature or operation. The chart shall be prepared to show the starting and completion dates of all work features on a linear horizontal time scale beginning with date of Notice to Proceed and indicating calendar days to completion. Contractor shall indicate on the chart the important work features or operations that are critical to the timely overall completion of the project. Key dates for such important work features and portions of work features are milestone dates and shall be so indicated on the chart. This schedule will be the medium through which the timeliness of the Contractor's construction effort is appraised.

1.4.3.3 Work Specified Elsewhere

Certain other construction sequence and time period restrictions relative to particular items of work are specified in the applicable specification sections to which the work pertains, and as specified on the contract drawings.

1.4.3.4 Phased Construction Schedule

Within the overall prosecution period of ~~270~~185 days, there are many items of work which must be performed during specific calendar dates and for durations shorter than ~~270~~185 days. All of the work of the project is represented by the five group classifications identified below. These classifications were formulated based on the level of inoperability that is imposed on the sector gates, and the resulting impact to the flood control capabilities of the barrier as a whole. Generally, those work activities which impose the greatest impact on the functioning of the gates (highest risk to flood control function) have the shortest work durations. It is important that the work be performed in a manner that will result in the work being completed during the time periods specified in order to minimize the time that the gates will be out of operation. Regardless, in emergency situations, the gates are to be made operational within 36 hours (see Subpart "Operation of the Navigation Gate").

Work Classification	Start Date	Finish Date
1. Repair of West Sector Gate; repair of gate wheels and all other items of work which must be performed in a dewatered environment and which would render the sector gate immoveable (disregarding the fact that the placement of the stoplogs temporarily prevents movement). Other work in the dewatered gate pocket may also be performed, as necessary and as time permits, such as painting of the skin plate, but priority shall be given to gate wheel repair.	~~14 Mar 03~~ 20 May 03	~~28 Mar 03~~ 9 Jun 03
2. Repair of West Sector Gate; painting, concrete repairs, and all other items of work which must be performed in a dewatered environment but which would not render the sector gate immoveable (disregarding the fact that the placement of the stoplogs temporarily prevents movement).	~~14 Mar 03~~ 18 Jun 03	~~11 Apr 03~~ 8 Jul 03
3. Repair of East Sector Gate; repair of gate wheels and all other items of work which must be performed in a dewatered environment and which would render the sector gate immoveable (disregarding the fact that the placement of the stoplogs temporarily prevents movement). Other work in the dewatered gate pocket may also be performed, as necessary and as time permits, such as painting of the skin plate, but priority shall be given to gate wheel	~~14 Nov 03~~ 30 Sep 03	~~28 Nov 03~~ 22 Oct 03

Work Classification	Start Date	Finish Date
repair.		
4. Repair of East Sector Gate; painting, concrete repairs, and all other items of work which must be performed in a dewatered environment but which would not render the sector gate immoveable (disregarding the fact that the placement of the stoplogs temporarily prevents movement).	~~14 Nov~~ 1 Nov 03	~~12 Dec 03~~ 20 Nov 03
5. All other work which does not require a dewatered environment and which has no effect on sector gate operability (e.g., concrete work and sump pump replacement in the crossover tunnel).	Within the overall prosecution period	

1.4.4 Organization at the Site

1.4.4.1 General

The Contractor shall employ ample personnel and sufficient equipment to accomplish the work of this contract in the least amount of time, within the prosecution period specified in the SPECIAL CONTRACT REQUIREMENTS, Clause 1, and as specified in Subpart "Phased Construction Schedule" above.

1.4.4.2 Rate of Progress

Should the Contractor fail to maintain a satisfactory rate of progress, the Contracting Officer may require that additional personnel and equipment be placed on the work and that weekend, night, and overtime work be performed in order that the work be brought up to schedule and maintained.

1.5 CONTRACTOR USE OF PREMISES

1.5.1 Storage Areas

Area within the project limits is available for use by the Contractor, for work, storage of equipment, materials and trailers during the life of this contract. A site will be determined at a prework conference prior to commencing work. The Contractor shall confine his storage areas to the limits as designated or approved by the Contracting Officer and shall be responsible for the security of the areas. Upon completion of the contract, the Contractor shall remove all equipment and materials, except as otherwise specified, and restore the site to its original condition as approved by the Contracting Officer at no additional cost to the Government.

1.5.2 Work Limits

Work shall be restricted to the areas shown on the contract drawings in addition to any storage area assigned to this Contractor.

1.5.3 Contractor's Receipt of Supplies

The Contractor is responsible for all arrangements for the receipt of materials and supplies at the job site. Government personnel are not permitted to receive or sign for items delivered to the site.

1.5.4 Access to Work Site

Access to the project site is currently available for construction traffic.

1.6 GOVERNMENT-FURNISHED MATERIAL

Pursuant to "FAR 52.245-2, Government Property (Fixed Price Contracts)," the Government will furnish the following materials for installation by the Contractor: Gate wheel assemblies (5 each)

1.6.1 Pickup Schedule

Notify the Contracting Officer in writing at least 5 calendar days in advance of the date of pickup. Government personnel will load equipment onto the Contractor's truck. The Contractor is responsible for tie-downs, transportation to the work site, and off-loading. Pick up materials no later than 5 calendar days after the indicated pickup date.

1.6.2 Pickup Location

The materials are located in the warehouse of the U.S. Army Corps of Engineers Cape Cod Canal Field Office in Buzzards Bay, Massachusetts.

1.7 COORDINATION

1.7.1 Restrictions

(1) The Contractor will not be permitted to keep his marine plant in the Navigation Channel when he is not working.

(2) The Contractor will be required to move his marine plant out of the Navigation Channel whenever a large tanker, general cargo, or similar vessel requires passage through the barrier opening.

(3) Many fishing and pleasure craft pass through the barrier daily. The Contractor shall provide such traffic controls as necessary during the time his plant is in the Navigation Channel.

(4) The Contractor shall be required to move his equipment off and adjacent to the gates in the event it becomes necessary to operate the barrier gates due to coastal storms, hurricanes, or other reasons.

1.7.2 Warnings to Shippers and other Users of the Navigation Channel

The Contractor shall provide notification to all concerned of the manner in which the work of this project interferes with normal traffic through the hurricane barrier. This notice shall be made by the Contractor by publication in the "Local Notice to Mariners" issued by the Commander, First Coast Guard District, 408 Atlantic Avenue, Boston, MA 02210. The Coast Guard requires a minimum three weeks lead time, in writing, for

publication of all notices.

1.7.3 Radio Monitoring

The Contractor's floating plant or other craft working in or adjacent to the harbor channel shall, at all times, monitor and transmit radio calls on VHF marine channels 13 and 16.

1.7.4 Salvaged Items

All items removed in order to install the new work and which are not required to be reinstalled, shall, unless otherwise specified, become the property of the Contractor and shall be removed from the site.

1.7.5 Work Restriction

No work will be permitted within a gate pocket after the pocket has been dewatered when an ocean-going tanker, cargo vessel or similar type and size vessel is passing through the barrier. The Contractor shall provide an approved method of notifying the workmen to leave the pocket.

1.7.6 Operation of the Navigation Gate

In the event it becomes necessary for the Government to operate the Navigation Gate because of coastal storms or hurricanes, the Contractor shall remove the stop gates from the guides and remove his plant from the navigation channel of the barrier within 36 hours of the time a notice is given by the Contracting Officer. The cost of maintaining and providing plant, equipment, and personnel in preparation for emergency removal of the stop gates shall be included in the unit price for Item No. 0002, "Install Stop Gates and Dewater Sector Gate Pocket". However, the cost of the emergency removal of the stop gates, including filling of the pocket, the subsequent replacement of the stop gates, the dewatering of the pocket to continue the work, and any damage to the new work, including painting performed by the Contractor and damages by the filling of the pocket, will be paid for under the adjustment changes clause of the contract.

1.8 PRECONSTRUCTION CONFERENCE

The Contracting Officer will conduct a preconstruction conference with key Contractor personnel. The purpose of the conference is to review contract requirements and to establish a working relationship between the Contractor's Staff and the Corps of Engineers personnel who will be closely associated with the project. During the conference, the Contracting Officer will inform the Contractor concerning Job Safety, Quality Control, Labor Relations, and Environmental Protection. The Contractor's Superintendent and Quality Control Representative shall attend this conference. All submittals which are ready for submission prior to start of work may be brought to the conference for distribution to the participating reviewers.

1.9 RECORD DRAWINGS

Maintain at the jobsite one set of full-size contract drawings marked to

show any deviations which have been made from the contract drawings, including buried or concealed construction and utility features revealed during the course of construction. Record the horizontal and vertical location of all buried utilities that differ from the contract drawings. These drawings shall be available for review by the Contracting Officer at all times. Upon completion of the work, submit the original marked set of prints to the Contracting Officer for approval. Requests for partial payments will not be approved if the marked prints are not current, and request for final payment will not be approved until the marked prints are submitted to and approved by the Contracting Officer.

1.9.1 Preparation of Record Drawings

The entries shall be made in the jobsite set of prints at the time field changes are made, pertinent information collected, or need for corrections established, as a continuing process during the life of the contract. As revised drawings are issued by the Contracting Officer, revised prints shall be introduced into the set to replace the superseded drawings and all applicable notations previously made on the superseded drawings transferred to the current prints. Carefully prepared sketches, not less than 8-1/2" x 11", may be used to depict changes or added information in lieu of notations on the actual prints. Staple sketches to the prints affected by the change. All plan views, sections, elevations, profiles, diagrams, details, or schedules affected by a change shall be marked up as required to reflect the change. All notations or changes made on the prints shall be in sufficient detail to clearly depict the change. Colored pens or pencils shall be used to make notations on the as-built prints as follows:

Red pen or pencil shall be employed to indicate added or corrected work or information.

Green pen or pencil shall be used to show the deleted or incorrectly depicted work or information.

Blue or black pen or pencil shall be used to show information not to be recorded on the drawings but included on the marked-up prints for explanatory or clarification purposes for the benefit of the Contracting Officer.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01270

MEASUREMENT AND PAYMENT

-- End of Section Table of Contents --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 REFERENCES (Not Applicable)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Quantity Surveys.

Submit originals of all field notes and all other records relating to quantity surveys.

1.3 RELATED REQUIREMENTS

CONTRACT CLAUSE "Payments under fixed price construction contracts."

1.4 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.5 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

1.6 BIDDING SCHEDULE - PAYMENT ITEMS

Payment items for the work of this contract on which the contract progress payments will be based are listed in the BIDDING SCHEDULE and are described below. All costs for items of work, which are not specifically mentioned to be included in a particular Bidding Schedule payment item, shall be included in the listed item most closely associated with the work involved.

a. Item No. 0001, Mobilization and Demobilization.

All costs for labor, equipment, and materials for mobilization and demobilization, in accordance with the specifications.

Unit of Measure: Lump Sum.

b. Item No. 0002, Inspect Stop Gates and Lifting Beams.

All costs for labor, equipment, and materials for the inspection of the stop gates and lifting beams, as shown on the contract drawings and in accordance with Section 02170 DEWATERING, INSPECTION AND MISCELLANEOUS REPAIRS, Section 05120 STOP GATES, LIFTING BEAMS, AND SECTOR GATE AND MISCELLANEOUS REPAIRS, and other appropriate sections of the specifications.

Unit of Measure: Lump Sum.

c. Item No. 0003, Install Stop Gates and Dewater Sector Gate Pockets.

All costs for labor, equipment, and materials for the installation and removal of the stop gates and one dewatering of one sector gate pocket as shown on the contract drawings and in accordance with Section 02170 DEWATERING, INSPECTION, AND MISCELLANEOUS REPAIRS, Section 02398 TIMBER FENDER REPAIRS, and other appropriate sections of the specifications.

Unit of Measure: Each.

d. Item No. 0004, Rehabilitate West Sector Gate.

All costs for labor, equipment, and materials for the rehabilitation of the West Sector Gate, which includes cleaning, inspection, access ladders, galvanized grates, cross-framing members, minor repairs to air and grease lines, silt moving, and concrete repairs within the gate pocket, and other incidental operations necessary to complete the work as shown on the contract drawings and in accordance with Section 02170 DEWATERING, INSPECTION, AND MISCELLANEOUS REPAIRS, Section 03730 REPAIR MORTARS FOR PATCHING, and other appropriate sections of the specifications.

b. Unit of Measure: Lump Sum.

e. Item No. 0005, Rehabilitate East Sector Gate.

All costs for labor, equipment, and materials for the rehabilitation of the East Sector Gate, which includes cleaning, inspection, access ladders, galvanized grates, cross-framing members, minor repairs to air and grease lines, silt moving, and concrete repairs within the gate pocket, and other incidental operations necessary to complete the work as shown on the contract drawings and in accordance with Section 02170 DEWATERING, INSPECTION, AND MISCELLANEOUS REPAIRS, Section 03730 REPAIR MORTARS FOR PATCHING, and other appropriate sections of the specifications.

b. Unit of Measure: Lump Sum.

f. Item No. 0006, Jacking of Sector Gate.

All costs for labor, equipment, and materials for two flooding and dewatering cycles, jacking and lowering of sector gate, and other incidental operations necessary to complete the work as shown on the contract drawings and in accordance with Section 02170 DEWATERING, INSPECTION, AND MISCELLANEOUS REPAIRS, Section 13000 JACKING OF SECTOR GATE AND INSTALLATION OF WHEEL ASSEMBLIES, and other appropriate sections of the specifications.

Unit of Measure: Each.

g. Item No. 0007, Replace Gate Wheel Assembly.

All costs for labor, equipment, and materials for transporting, delivering, and installing Government furnished gate wheel assemblies and other incidental operations necessary to complete the work as shown on the contract drawings and in accordance with Section 13000 JACKING OF SECTOR GATE AND INSTALLATION OF WHEEL ASSEMBLIES, and other appropriate sections of the specifications.

Unit of Measure: Each.

h. Item No. 0008, Replace Timber Fenders Above Mean Low Water (MLW).

All costs for labor, equipment, and materials for replacing timber fenders above mean low water (MLW) as shown on the contract drawings and in accordance with Section 02398 TIMBER FENDER REPAIRS and other appropriate sections of the specifications.

Unit of Measure: Each.

i. Item No. 0009, Replace Timber Fenders Below Mean Low Water (MLW).

All costs for labor, equipment, and materials for replacing timber

fenders below mean low water (MLW) as shown on the contract drawings and in accordance with Section 02398 TIMBER FENDER REPAIRS and other appropriate sections of the specifications.

Unit of Measure: Each.

~~i~~j. Item No. ~~0009~~0010, Replace Timber Fender Brackets Above Mean Low Water (MLW).

All costs for labor, equipment, and materials for replacing timber fender brackets above mean low water as shown on the contract drawings and in accordance with Section 02398 TIMBER FENDER REPAIRS and other appropriate sections of the specifications.

Unit of Measure: Each.

k. Item No. 0011, Replace Timber Fender Brackets Below Mean Low Water (MLW).

All costs for labor, equipment, and materials for replacing timber fender brackets below mean low water as shown on the contract drawings and in accordance with Section 02398 TIMBER FENDER REPAIRS and other appropriate sections of the specifications.

Unit of Measure: Each.

~~j~~l. Item No. ~~0010~~0012, Concrete Repairs and Miscellaneous Repairs.

All costs for labor, equipment, and materials for gate seal placement, repairs to stair nosings in abutment stairwells, sump pump and piping replacement in the crossover tunnel and stairwells, and concrete repairs outside of dewatered areas as shown on the contract drawings and in accordance with Section 05120 STOP GATES, LIFTING BEAMS, AND SECTOR GATE AND MISCELLANEOUS REPAIRS, and other appropriate sections of the specifications.

Unit of Measure: Lump Sum.

~~k~~m. Item No. ~~0011~~0013, Painting.

All costs for labor, equipment, and materials for all painting required by this project, including in the gate pockets, the stop gates, and underwater painting, as shown on the contract drawings and in accordance with Section 09965 MAINTENANCE PAINTING SECTOR GATES, Section 02490 UNDERWATER WORK, and other appropriate sections of the specifications.

Unit of Measure: Lump Sum.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02170

DEWATERING, INSPECTION AND MISCELLANEOUS REPAIRS

-- End of Section Table of Contents --

SECTION 02170

DEWATERING, INSPECTION AND MISCELLANEOUS REPAIRS

PART 1 GENERAL

1.1 REFERENCES (Not applicable.)

1.2 GENERAL REQUIREMENTS

This section covers miscellaneous items of site work not covered in other sections of these specifications. The work consists of providing all plant, labor, equipment and materials (except equipment specified herein to be Government furnished) and in performing all operations in connection with the miscellaneous items of site work, complete as specified in this section.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Work Plan; G, C.

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations.

1.4 SYSTEM DESCRIPTIONS

1.4.1 Stop Gate System for Dewatering Sector Gates

The stop gate system, including stop gates, lifting beams and related accessories, is shown on the information drawings. The drawings also show the relationship of the various parts of the system when the stop gates are installed within the sector gates. The stop gates, lifting beams and accessories are constructed of regular and extra strength structural steels. Each gate is completely assembled. The Contractor shall take all precautions as required during handling and storage to prevent the rubber seals and springs from being held in a compressed state when not in the dewatering position. The following data on stop gate weight is furnished for the information of the Contractor. All the lifting beams weigh less than 2000 pounds each.

Per Stop Gate

Dead Weight Type	Submerged Weight (lbs.)	Closing Friction (lbs.)	(lbs. approx.)
I & IA	9500	8100	2450
II & IIA	6000	5300	2450
III & IIIA	4000	3500	2450

1.4.2 Gated Conduits

There are two gated conduits through the dike as shown on the information drawings. Each conduit consists of two separate gate passages, for a total of four. The gate passages are provided with stop log slots at both ends. Stop logs are stored at the jobsite.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 STOP GATES

3.1.1 Inspection and Repair of Stop Gates and Accessories

The gates, lifting beams, and accessories are in storage at the jobsite within a fenced area as shown on the information drawings. The gates were last used for the purpose of a major rehabilitation of the sector gates during 1997 and have been in storage at this location for approximately six years. The Contractor shall carefully remove the gates, etc., disconnecting and removing all connections, wire ropes, timbers, blocking and boards, etc. The Contractor, accompanied by a Government structural inspector, shall carefully inspect the stop gates and accessories to determine if repairs are required. The Contractor shall be responsible for making this inspection, performing all necessary repairs required as a result of the inspection, and having the gates ready for installation at the proper time. The Contractor shall provide all materials and labor to make sure the gate wheels and latching devices operate properly, and the gates are ready for installation. An equitable adjustment shall be made to the contract for all repairs required as a result of this inspection. Repairs shall be made as specified in Section 05120 STOP GATES, LIFTING BEAMS AND SECTOR GATE AND MISCELLANEOUS REPAIRS. The Contractor shall thoroughly grease all wheels on the stop gates and stop gate lifting beams prior to installation. Except as shown on the information drawings, all items of equipment required to remove and return gates to storage shall be provided by the Contractor. All storage items shall be carefully removed and stored in the fenced area ready for use in returning the gates to storage after the work is completed.

3.1.2 Inspection and Cleaning of Stop Gate Guides

Prior to installation of the stop gates in either sector gate, the Contractor shall retain divers to inspect the condition of the gate guides and sills of the sector gate leaf to determine if rust, sediment, debris or marine growth will interfere with installation of the gates. The Contractor shall clean the guide and sill surfaces so that the stop gates will properly seal the openings such that the gate pocket can be dewatered until all required inspections and repairs are completed. Significant effort will be required to clean rust and scale from the guides in the splash zone (between timbers 2 and 5). The cleaning of the guides and sills shall be completed prior to the dates that installation of the gates are required.

In addition, after cleaning is complete, all web to flange welds on the gate guides which are located under the water surface shall be visually inspected by a certified weld inspector who is also a diver. Any deficiencies shall be documented and brought to the immediate attention of the Contracting Officer.

Diving operations, which are required for cleaning and inspection work described in this section shall be conducted in accordance with Section 02490 UNDERWATER WORK.

3.1.3 Inspection and Cleaning of Pocket Sluice Gates and Guides

Contractor's divers shall also inspect the condition of the 2-foot square pocket sluice gates, guides and sills to determine if rust, sediment, debris, or marine growth will interfere with complete closure of the gates. The Contractor shall clean the gate, guide, and sill surfaces so that the pocket gates will properly seal the openings such that the gate pocket can be dewatered until all required inspections and repairs are completed. The cleaning of the pocket gates, guides, and sills shall be completed prior to the dates that installation of the stop gates are required. Pocket gates are shown on NBF-1-1131, sheet 101 of the information drawings.

3.1.4 Installation of Stop Gates

The stop gates shall be installed when the sector gate leaves are in the open position (gates within the pockets). The west sector gate shall be rehabilitated first. The stop gates shall be installed in the sector gate leaf, using the Government owned lifting beams and accessories. The Contractor shall provide all other temporary equipment required to place and later remove the stop gates. The Contractor shall remove a portion of the gate catwalk and railing to allow placement of the Type III stop gates. The stop gates shall be inspected by divers during installation to insure that they fit accurately and are in proper alignment in the gate guides before pumping begins.

3.1.5 Returning Stop Gates to Storage

Upon completion of rehabilitation work on the New Bedford sector gate~~s~~, and prior to using the stop gates for dewatering the Fairhaven side, the stop gates will be pressure washed and painted per Section 09965 MAINTENANCE PAINTING SECTOR GATES. After painting, the stop gate~~s shall be cleaned~~

~~with fresh water, and all~~ wheels shall be greased via existing pressure lubricating fittings. After completion of rehabilitation work on the Fairhaven sector gate, ~~A~~any damage to stop gates and accessories caused by transportation and handling shall be repaired. After repairs, cleaning and greasing are complete, the stop gates shall be cleaned with fresh water and returned to storage as indicated on the applicable information drawing.

3.2 DEWATERING

After installation of the stop gates in the west sector gate, the gate pocket shall be carefully dewatered, and shall be kept in a dewatered condition until the gate leaf has been inspected by the Government, and all contract required work in and below the splash zone is completed. The dewatering pump shall be installed in the gate pocket sump which is shown on information drawing NBF-1-1105, Sheet 75. The sump shall be cleared of silt and debris by divers prior to pump installation. The Contractor shall provide submersible pumps capable of creating a minimum draw down pumping rate in excess of 5,000 gpm against an initial static discharge head of 25 feet, in order to properly seat the rubber stop gate seals and prevent the inflow of water. Should pumping at this rate prove ineffective, due to insufficient cleaning of the gate guides and sill surfaces, additional pumping capacity shall be provided as necessary for the gates to seal. The Contractor shall provide equipment to ascertain actual pumping rate (gpm) and discharge head provided by the dewatering pumps. This data shall be recorded in 1/2 hour intervals during the dewatering period and recorded on daily quality control reports. After all work on the west sector gate has been completed and the pocket has been flooded, the stop gates shall be removed, and at the time specified in Section 01110 SUMMARY OF WORK, the stop gates shall be installed in the east sector gate and that gate pocket dewatered as specified above.

3.3 CLEARING OF SILT, SAND AND DEBRIS IN SECTOR GATE POCKETS

All existing silt, sand and debris which may interfere with sector gate jacking, wheel replacement operations, and air and lubrication systems inspections shall be cleared from around the bottom of the sector gate arc. A clamshell bucket shall be provided to muck out areas near the gate wheels. All cleared material shall be removed from the work area and deposited in another area of the gate pocket.

3.3.1 Personnel Protection

Sediment sampling performed in the past has indicated that silt material in the gate pockets is contaminated with PCB's to a level no greater than 6.8 parts per million (ppm). This level of contamination is not considered hazardous and will require no special handling other than protection against skin contact. See Section 01525 GENERAL SAFETY REQUIREMENTS for other safety related requirements.

3.4 BLAST CLEANING OF SECTOR GATE

The Contractor shall thoroughly clean marine growth from exterior surfaces of all sector gate wheel assemblies, trunnion assemblies and wheel lubrication and air jetting system pipelines. Thorough cleaning is

necessary to allow for a complete inspection of these parts. Cleaning shall be accomplished by means of an appropriately sized water blasting system provided by the Contractor. Surfaces to be painted shall be cleaned in accordance with Section 09965 MAINTENANCE PAINTING SECTOR GATES.

3.5 INSPECTION AND TESTING OF AIR JETTING SYSTEMS AND LUBRICATION SYSTEMS

3.5.1 General

All portions of the existing air jetting system and the lubrication systems for the sector gate wheels and trunnions at each gate leaf shall be inspected and tested by the Contractor as directed and supervised by the Contracting Officer's authorized representative. The inspection and testing shall be performed in the dry as specified below to insure that the systems do not leak and that all materials and items of equipment function properly. The inspection and testing will be performed after the gate skirts have been removed, the components have been cleaned of marine growth, and the silt, sand and debris have been cleared away from the gate wheels.

3.5.2 Inspection and Leakage Testing

The Contractor together with an authorized representative of the Contracting Officer shall conduct a visual inspection of all portions of the air jetting system and compressor houses and wheel and trunnion lubrication lines. The location and nature of corrosion or other defects and any items in need of repair shall be noted. Government personnel will start and operate the compressors.

(1) Air jetting systems shall be tested for leaks and proper operation by operating the system compressors and checking all unions and pipe joints for leaks. The air nozzles located at the wheels shall be removed and quantity of air flow observed at the end of the pipe.

(2) The wheel and trunnion pin lubrication systems shall be tested for leaks and proper operation by pumping lubricant into each lubrication line at the fittings located at the top truss of each gate. Leaks in the lines and whether or not the lubricant reaches the wheels and trunnions shall be noted. Pumping equipment and lubricant materials will be furnished, without cost, to the Contractor by the Government.

3.5.3 Repairs

Air or lubricant leaks which are easily repaired by tightening or remaking the joint, shall be repaired by the Contractor at no additional cost to the Government. The trunnion grease lines are shown on information drawing NBF-1-1140. Other repairs and/or replacements shall be performed by the Contractor as directed by the Contracting Officer, and an equitable adjustment will be made to the contract to cover the cost of such work.

3.6 CLEANING OF GATED CONDUITS

All four gate passages in the two gated conduits shall be thoroughly

cleaned of silt, sand, debris, and marine growth. Contractor shall insert Government supplied stop logs into both ends of one gate passage and provide pumps of sufficient size to dewater the gate passage and maintain it in a dewatered state during cleaning. Marine growth shall be cleaned from walls and floor, with particular attention given to sluice gates and gate guides. All silt, sand, debris and marine growth shall be removed from the gate passage and disposed of in an area well away from either end of the conduit. After one gate passage is thoroughly cleaned, the stop logs shall be removed and inserted in the next gate passage which shall then be cleaned in the same manner. Following cleaning of all four gate passages, the stop logs shall be removed and returned to storage as directed by the Contracting Officer. It is estimated that there are approximately 25 cubic yards of sediment in each gate passage.

3.6.1 Railing Replacement

The 2-inch diameter pipe railings located on top of the harborside and oceanside headwall abutments of Gated Conduit No.1 and Gated Conduit No. 2 shall be removed and replaced with galvanized pipe railings of the same size and dimensions. Pipe railing locations for Gated Conduit No. 1 are shown on Sheet 45 of Reference Drawing NBF-1-1075 and for Gated Conduit No. 2 on Sheet 47 of Reference Drawing NBF-1-1077.

-- End of Section --

This page was intentionally left blank for duplex printing.

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02490

UNDERWATER WORK

-- End of Section Table of Contents --

SECTION 02490

UNDERWATER WORK

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Location of Diving Operations

The location of services to be performed under this contract is in and around the navigation channel of the New Bedford Hurricane Barrier, New Bedford, MA.

1.1.2 Underwater Work

Provide necessary services and equipment to perform underwater inspections and repair tasks.

1.1.3 Types of Diving Operations

The surface supplied air mode of diving shall be used for all underwater work.

1.1.4 Underwater Work Tasks

Underwater tasks to be performed under this contract are as follows:

All underwater observations made during inspections and jacking procedure monitoring shall be color video taped, and the tape furnished to the Contracting Officer. The video camera shall be mounted on the divers helmet to allow hands free operation. The lead to the camera shall be married into the divers umbilical.

a. Diving tasks required ~~for "Repairs to Stop Gate Guides"~~ include the following. All diving associated with this work item will be performed within the navigation channel:

(1) At each gate, perform an underwater inspection of timber fenders and steel supports for the fenders. All steel support plates (3/4 inch thick) and stiffener plates (1/2 inch thick) with 15% or more section loss shall be marked and recorded for replacement with new support plates and stiffeners. Timber fenders with loose, cracked, or deteriorated sections shall be marked and recorded for replacement with new timber fenders.

(2) Remove existing deteriorated support plates and stiffeners identified by the underwater inspection, and replace with new plates and stiffeners.

(3) Remove existing deteriorated timber fenders identified by the underwater inspection, and replace with new timber fenders and bolted connections.

b. Diving tasks required for gate dewatering and rehabilitation:

West Sector Gate:

(1) Inspect and clean sector gate guides and sills prior to installation of stop gates. Prior to dewatering of the sector gate, divers shall inspect, remove, and replace with identical materials any deteriorated or missing components of the gate guide seals at Stop Gate Guide location G-7 for the west sector gate. Rubber seals will be furnished by the Government. These components include the keeper plate, guide flange rubber seal, and all attachment hardware as shown on Sheet 116 of Reference Drawing NBF-1-1146, Detail - H.

(2) Inspect the installed sector stop gates for proper fit prior to dewatering. Report condition of the installed stop gates to the Contracting Officer.

(3) Monitor jacks during gate lifting procedure. Adjust jack locknuts and insert shims to verify gate position.

(4) Monitor jacks during gate lowering procedure. Adjust jack locknuts and insert shims to verify gate position.

East Sector Gate:

(6) Inspect and clean west sector gate guides and sills prior to installation of stop gates. Prior to dewatering of the sector gate, divers shall inspect, remove, and replace with identical materials any deteriorated or missing components of the gate guide seals at Stop Gate Guide location G-7 for the east sector gate. Rubber seals will be furnished by the Government.These components include the keeper plate, guide flange rubber seal, and all attachment hardware as shown on Sheet 116 of Reference Drawing NBF-1-1146, Detail - H.

(7) Inspect west sector stop gates in place prior to dewatering.

(8) Monitor jacks during gate lifting procedure. Adjust jack locknuts and insert shims to verify gate position.

(9) Monitor jacks during gate lowering procedure. Adjust jack locknuts and insert shims to verify gate position.

c. Diving tasks required for maintenance painting of the sector gates include the following. All diving associated with this work item will be performed within the navigation channel:

(1) The surface areas of the sector gates that were inaccessible with the gates in the dewatered gate pockets shall be inspected by underwater divers, after the gates are repaired and placed back in service. Paint failure areas identified by the underwater inspection

shall be cleaned and painted underwater as specified in this section. Each gate will be moved out into the channel a few feet to perform the inspection and underwater painting.

(2) Paint failure areas identified by the underwater inspection shall be cleaned and painted underwater as specified in Section 09965 MAINTENANCE PAINTING SECTOR GATES. Each gate will be moved out into the channel a few feet to perform the inspection and underwater painting.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) Safety and Health Requirements Manual

The Manual may be viewed or downloaded free of charge via the Internet at the New England District Homepage http://www.nae.usace.army.mil/ under "Advertised Solicitations."

1.3 SUBMITTALS

The items listed in Article "Submittal Items" below shall be submitted to the Contracting Officer for review and acceptance by the New England District Diving Coordinator.

1.3.1 Accepted Submittals

The acceptance of submittals by the District Diving Coordinator shall not be construed as a complete check, but will indicate only that the submittal generally complies with regulatory requirements. Acceptance will not relieve the Contractor of the responsibility for compliance with EM 385-1-1, Section 30. After submittals have been accepted by the District Diving Coordinator or his designated representative, no resubmittal will be given consideration unless accompanied by an explanation as to why changes are necessary.

1.3.2 Unaccepted Submittals

The Contractor or his designated representative shall make all corrections required by the District Diving Coordinator and promptly furnish a corrected submittal in the form and number of copies as specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, notice shall be given promptly to the Contracting Officer and the District Diving Coordinator.

1.3.3 Submittal Procedure

Submittals shall be made as follows:

1.3.3.1 Procedures

Submit three (3) copies of each submittal item to the Contracting Officer for review by the District Diving Coordinator. For work of an urgent nature, FAX or hand carry a copy of a complete dive plan. In extreme situations, review actions may take place at the dive site, just prior to the dive operation.

1.3.3.2 District Diving Coordinator Review

Review action on all submittals is by the New England District Diving Coordinator, Mr. George Norton, Telephone Number 978-318-8870, FAX Number 978-318-8606, EMAIL george.h.norton@usace.army.mil.

1.3.3.3 Information on Submittal Status

All Contractor requests for current status of submittal reviews shall be made through the Project Resident Engineer.

1.3.3.4 Deviations

For submittals which include proposed deviations requested by the Contractor, the Contractor shall set forth in writing the reason for the deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.3.4 Government Accepted Submittals

Upon completion of review of submittals requiring District Diving Coordinator acceptance, the submittals will be identified as having received acceptance by being so noted and dated. Two copies of the submittal will be retained by the District Diving Coordinator and one copy of the submittal will be returned to the Contractor.

1.3.5 Information Only Submittals

Normally submittals for information only will not be returned. Acceptance of the District Diving Coordinator is not required on information only submittals. These submittals will be used for information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to comply with these specifications and will not prevent the Contracting Officer from requiring contract compliance.

1.3.6 Submittal Items

The Contractor shall submit all items listed below. The District Diving Coordinator may request submittals in addition to those listed when deemed necessary to adequately describe the work covered in the particular work order. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to

submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) representative and shall be stamped, signed, and dated by the CQC representative certifying that the submittal complies with the contract requirements. Proposed deviations from the contract requirements shall be clearly identified.

1.3.6.1 Contractor Safe Practices Manual

The Contractor shall develop and maintain a safe practices manual. The safe practices manual shall contain all of the information required by 29 CFR 1910.420 and the additional information as specified below. This manual shall encompass the Contractor's entire diving program and be available at all times at the dive location to each dive team member and the Government representative. The safe practices manual shall include the items listed in paragraph 30.A.11 of EM 385-1-1, Section 30, and verification of dive team qualifications and experience. Verification of dive team qualifications and experience includes divers, diving supervisor, and tenders. Evidence that each dive team member has current certification in cardiopulmonary resuscitation (CPR) and first aid shall be submitted. A lack of experience or qualifications to perform the tasks stated in the scope of work will be cause for rejection or cessation of operations.

1.3.6.2 Site Specific Diving Operational Plans

A site specific diving operations plan shall be developed for each separate diving operation. This plan shall be submitted to the District Diving Coordinator for review and acceptance, prior to commencement of diving operations. The accepted plan shall be at the diving location at all times and be made available to the Government diving inspector upon request. As a minimum, the plan shall contain the information required by EM 385-1-1, Section 30, Paragraph 30.A.13. For medical requirements, see COE EM 385-1-1, Section 30, Paragraph 30.A.12.

1.4 REGULATORY REQUIREMENTS

All diving operations performed under this contract shall comply with EM 385-1-1, Section 30, dated 3 Sep 96.

The New England District may elect to implement and enforce more stringent diving requirements than stated in the above reference, but under no circumstances will the operational requirements be less than specified in the reference.

1.4.1 Policy

It is the policy of the Corps of Engineers that all contract diving operations be conducted in a prudent manner that will provide for maximum efficiency and minimize the potential for personal injury, loss of life, occupational illness and/or property damage. The New England District, Corps of Engineers will not utilize divers if the objective can be more safely and efficiently accomplished by another means, e.g., using remote controlled television systems in lieu of divers.

1.5 DIVING INSPECTION AND MONITORING

All Contractor diving operations will be inspected or monitored by the New England District Diving Coordinator or a designated representative who holds a current Corps of Engineers diving inspection certification. Diving shall not be permitted unless a Corps of Engineers certified diving inspector is present on-site, unless the District Diving Coordinator has granted permission for off-site monitoring. Off-site monitoring will only be granted after an initial on-site inspection to verify the Contractors compliance with EM 385-1-1, Section 30. Dive operation monitoring consists of occasional telephone contact with the Contractor's on-site dive supervisor and occasional site inspections. Failure to adhere to these requirements will be considered a serious violation of this contract and cause for an immediate stop-work order issued by the Contracting Officer.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

-- End of Section --

This page was intentionally left blank for duplex printing.

SECTION TABLE OF CONTENTS

DIVISION 09 - FINISHES

SECTION 09965

MAINTENANCE PAINTING SECTOR GATES

-- End of Section Table of Contents --

SECTION 09965

MAINTENANCE PAINTING SECTOR GATES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Surfaces To Be Inspected and Spot Painted

a. All previously painted surfaces of each sector gate, stop log and the steel grating stairway in each gate pocket shall be thoroughly inspected for bare metal areas, rust spots, paint blisters, under film corrosion and any surface area, regardless of size, where the existing paint system has otherwise thinned out or failed. The two stop gates that support the limit switches and the exposed accessible surfaces of the gate seals shall also be inspected for corrosion. Marine growth in and below the tide zone shall be removed by scraping or by high pressure water blasting as necessary to properly examine the the surfaces for paint failure areas. Should there by any doubt regarding the soundness of any existing painted surface, resolution will be by the Contracting Officer. All paint failure areas discovered by this cleaning survey inspection shall be marked or otherwise identified for spot cleaning and painting. See also article "CLEANING AND PREPARATION OF SURFACES TO BE PAINTED."

All previously painted surfaces of the stop gates and lifting beams shall also be inspected for paint failure areas and spot cleaned and repainted as specified in this section. All failed paint and corrosion shall be completely removed from stop gates and lifting beam surfaces. Careful records shall be made of the numbers painted on the gates and the numbers restored after cleaning and painting. Blast cleaning and painting operations may be performed on the stop gates and lifting beams within the gate storage area at the project site. Although full containment of blast debris is not required, the cleaning operation shall be conducted in a manner to permit the collection of the blast debris for proper disposal. Collected blast debris shall be disposed of off site in accordance with Federal, State and local regulations.

b. Steel surfaces within the tide zone are heavily corroded and will require extensive blast cleaning and repainting over relatively large areas.

c. All paint system failure areas determined by the inspection while the gates are in the dewatered gate pockets shall be spot cleaned and painted in strict accordance with the requirements of these specifications.

d. Areas of the sector gates that are inaccessible in the dewatered gate pockets shall be inspected by underwater divers after the gates are repaired, including maintenance painting, and placed back in service. Each gate will be moved out into the channel a few feet as necessary to perform the inspection. Underwater operations shall be performed in accordance

with Section 02490 UNDERWATER WORK.

e. Paint failure areas identified by the underwater inspection shall be cleaned and painted underwater as specified in this section. Each gate will be moved out into the channel a few feet as necessary to perform the underwater painting work. Underwater operations shall be performed in accordance with Section 02490 UNDERWATER WORK.

f. All previously painted surfaces of the sector gates and stop gates that are damaged as a result of the Contractor's operations shall be spot cleaned and spot refinished as specified in this Section.

g. All new steel items to be incorporated in the work shall be cleaned and painted as specified in this Section.

1.1.2 Original Paint System

The gates and appurtenances were originally painted with Tarset Standard, which was applied to a minimum thickness of 20 mils. Horizontal Truss No. II was cleaned and repainted using coal-tar epoxy (C-200) in 1971, 1976, and again in 1982. The gates where spot cleaned and spot painted in 1990 using a zinc-rich epoxy primer on bare steel areas and a C-200 finish coat.

1.1.3 Condition of Existing Paint System

Paint failure and rusting is not uniform on the sector gates and may vary widely over a given area. However, the majority of coating failure has occurred in the splash zone and in difficult to clean locations such as the joints and crevices of built up members. It is anticipated that from 10 to 15 percent of the surface area of each sector gate structure is heavily corroded and will require complete cleaning to the "Commercial Blast Cleaning Grade" as specified in Article "Surface Preparation".

1.1.4 Paint Formulations

Primer for application to bare steel only shall be a zinc-rich-Epoxy-Polyamide conforming to these specifications. Top coat shall be Corps of Engineers coal-tar epoxy C-200 or commercial equivalent. Where paint must be applied underwater, the coating shall be an approved epoxy specifically designed for underwater application.

1.1.5 Surfaces Not To Be Painted

Wheel assemblies and related parts shall not be painted. Non-Ferrous metal items, including monel lubrication piping and fittings, shall not be painted. Electrical equipment and conduits shall not be painted. Galvanized surfaces shall not be cleaned and painted.

1.1.6 Operational Restrictions

The Contractor shall provide adequate heating and dehumidifying equipment to ensure that the surfaces to be painted are dry enough and warm enough to be painted as specified in this section. The Contractor shall provide adequate ventilation and proper clothing and equipment for personnel to

ensure their safety. Adequate hearing protection shall be provided for personnel exposed to continuous high level noise. Goggles, masks and respirators shall be subject to the approval of the Contracting Officer.

1.1.7 Unsatisfactory Work

If, before the final acceptance of the entire work covered under this contract, it should be found that surfaces specified to be painted have not been properly cleaned in accordance with these specifications or that surfaces have been coated with impure or unauthorized paint, such surfaces shall be thoroughly cleaned and repainted as originally specified, at no additional expense to the Government. No mechanical item shall be painted in such manner that it is prevented from operating properly.

1.1.8 Responsibility for Damages

The Contractor shall be responsible for damages to existing structures or other items resulting from his painting operation. All items damaged by the Contractor shall be cleaned, repaired or replaced as directed by the Contracting Officer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z87.1	(1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection
ANSI Z358.1	(1990) Emergency Eyewash and Shower Equipment

ASTM INTERNATIONAL (ASTM)

ASTM D 1186	(1993) Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
ASTM D 4417	(1993; R 1999) Field Measurement of Surface Profile of Blast Cleaned Steel

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(1999) National Electrical Code

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Paint 16	(1991) Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint
SSPC SP 1	(1982) Solvent Cleaning

SSPC SP 3	(1995) Power Tool Cleaning
SSPC SP 5	(1994) White Metal Blast Cleaning
SSPC SP 6	(1994) Commercial Blast Cleaning

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) Safety and Health Requirements Manual

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-DTL-24441	(Rev C, Supplement 1) Paint, Epoxy-Polyamide, General Specification for

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.94	Ventilation
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910, Subpart I	Personal Protective Equipment
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.62	Lead
	Quality Monitoring
	National Pollutant Discharge Elimination System

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

In addition to the items listed below, the Contractor shall submit an Accident Prevention Plan in accordance with the requirements of Section 01525 SAFETY REQUIREMENTS.

SD-03 Product Data

Confined Space Procedures

The Contractor shall submit detailed written standard operating procedures for confined spaces in accordance with 29 CFR 1910.146 and EM 385-1-1, Section 6I, and as further described in this paragraph.

a. The procedures shall include certificates of calibration for all testing and monitoring equipment. The certificates of calibration shall include: type of equipment, model number, date of calibration, firm conducting calibration, and signature of individual certifying calibration.

b. The procedures shall include methods of inspection of personal protective equipment prior to use.

c. The procedures shall include work practices and other engineering controls designed to reduce airborne hazardous chemical exposures to a minimum.

d. The procedures shall include specification of the design and installation of ventilation systems which shall provide adequate oxygen content and provide for the dilution of paint solvent vapor, lead, and other toxic particulates within the confined space. In addition, the contractor shall include plans to evaluate the adequacy of air flow patterns.

Respiratory Protection Program

The Contractor shall submit a comprehensive written respiratory protection program in accordance with 29 CFR 1910.134, 29 CFR 1926.62, and Section 05.E of EM 385-1-1.

Ventilation Assessment

The contractor shall submit a plan to provide ventilation assessment as required by paragraph PAINT APPLICATION, subparagraph VENTILATION.

SD-06 Test Reports

Specification and Proprietary Paints

For products that are specified to be applied in accordance with the manufacturer's recommendations the Contractor shall submit the paint producers product data sheet or other written instructions for those products. The Contractor shall submit in lieu of the liquid paint sample:

a. A certified test report showing the results of required tests made on the material and a statement that it meets all of the specification requirements.

b. A certified test report showing the results of required tests made on a previous batch of paint produced by the same firm using the same ingredients and formulation except for minor differences necessitated by a color change and a statement that the previous batch met all of the specification requirements. A report of tests on the proposed batch showing the following properties applicable to the material specifications shall be furnished: color, gloss, drying time, opacity, viscosity, weight per gallon (liter), and fineness of grind.

Inspection and Operation Records

The Contractor shall submit records of inspections and operations performed in accordance with paragraph INSPECTION. Submittals shall be made on a daily basis.

SD-07 Certificates

Qualified Coating Thickness Gages

Documentation of manufacturer's certification shall be submitted for all coating thickness gages.

1.4 QUALIFICATIONS

1.4.1 Coating Thickness Gage Qualification

Documentation of certification shall be submitted for all coating thickness gages. Magnetic flux thickness gages as described in ASTM D 1186 shall be used to make all coating thickness measurements on ferrous metal substrates. Gages shall have an accuracy of +/- 3 percent or better. Gages to be used on the job shall be certified by the manufacturer as meeting these requirements.

1.5 SAFETY AND HEALTH PROVISIONS

Work shall be performed in accordance with the requirements of 29 CFR 1910, 29 CFR 1926, EM 385-1-1, and other references as listed herein. Matters of interpretation of the standards shall be submitted to the Contracting Officer for resolution before starting work. Where the regulations conflict, the most stringent requirements shall apply. Paragraph SAFETY AND HEALTH PROVISIONS supplements the requirements of EM 385-1-1, paragraph (1). In any conflict between Section 01 of EM 385-1-1 and this paragraph, the provisions herein shall govern.

1.5.1 Abrasive Blasting

The Contractor shall comply with the requirements in Section 06.H of EM 385-1-1.

1.5.1.1 Hoses And Nozzles

In addition to the requirements in Section 20 of EM 385-1-1, hoses and hose

connections of a type to prevent shock from static electricity shall be used. Hose lengths shall be joined together by approved couplings of a material and type designed to prevent erosion and weakening of the couplings. The couplings and nozzle attachments shall fit on the outside of the hose and shall be designed to prevent accidental disengagement.

1.5.1.2 Workers Other Than Blasters

Workers other than blasting operators working in close proximity to abrasive blasting operations shall be protected by utilizing MSHA/NIOSH-approved half-face or full-face air purifying respirators equipped with high-efficiency particulate air (HEPA) filters, eye protection meeting or exceeding ANSI Z87.1 and hearing protectors (ear plugs and/or ear muffs) providing a noise reduction rating of at least 20 dBA or as needed to provide adequate protection.

1.5.2 Cleaning with Compressed Air

Cleaning with compressed air shall be in accordance with Section 20.B.5 of EM 385-1-1 and personnel shall be protected as specified in 29 CFR 1910.134.

1.5.3 Cleaning with Solvents

1.5.3.1 Ventilation

Ventilation shall be provided where required by 29 CFR 1910.146 or where the concentration of solvent vapors exceeds 10 percent of the Lower Explosive Limit (LEL). Ventilation shall be in accordance with 29 CFR 1910.94, paragraph (c)(5).

1.5.3.2 Personal Protective Equipment

Personal protective equipment shall be provided where required by 29 CFR 1910.146 and in accordance with 29 CFR 1910, Subpart I.

1.5.4 Mixing Epoxy Formulations

1.5.4.1 Exhaust Ventilation

Local exhaust ventilation shall be provided in the area where the curing agent and resin are mixed. This ventilation system shall be capable of providing at least 100 linear fpm of capture velocity measured at the point where the curing agent and resin contact during mixing.

1.5.4.2 Personal Protective Equipment

Exposure of skin and eyes to epoxy resin components shall be avoided by wearing appropriate chemically resistant gloves, apron, safety goggles, and face shields meeting or exceeding the requirements of ANSI Z87.1.

1.5.4.3 Medical Precautions

Individuals who have a history of sensitivity to epoxy or polyurethane resin systems shall be medically evaluated before any exposure can occur.

Individuals who are medically evaluated as exhibiting a sensitivity to epoxy resins shall not conduct work tasks or otherwise be exposed to such chemicals. Individuals who develop a sensitivity shall be immediately removed from further exposure and medically evaluated.

1.5.4.4 Emergency Equipment

A combination unit, comprised of an eyewash and deluge shower, within close proximity to the epoxy or polyurethane resin mixing operation shall be provided in accordance with ANSI Z358.1, paragraph (9).

1.5.5 Paint Application

1.5.5.1 Ventilation

When using solvent-based paint in confined spaces, ventilation shall be provided to exchange air in the space at a minimum rate of 5,000 cubic feet per minute per spray gun in operation. It may be necessary to install both a mechanical supply and exhaust ventilation system to effect adequate air changes within the confined space. All air-moving devices shall be located and affixed to an opening of the confined space in a manner that assures that the airflow is not restricted or short circuited and is supplied in the proper direction. Means of egress shall not be blocked. Ventilation shall be continued after completion of painting and through the drying phase of the operation. If the ventilation system fails or the concentration of volatiles exceeds 10 percent of the LEL (except in the zone immediately adjacent to the spray nozzle), painting shall be stopped and spaces evacuated until such time that adequate ventilation is provided. An audible alarm that signals system failure shall be an integral part of the ventilation system. The effectiveness of the ventilation shall be checked by using ventilation smoke tubes and making frequent oxygen and combustible gas readings during painting operations. Exhaust ducts shall discharge clear of the working areas and away from possible sources of ignition.

1.5.5.2 Explosion Proof Equipment

Electrical wiring, lights, and other equipment located in the paint spraying area shall be of the explosion proof type designed for operation in Class I, Division 1, Group D, hazardous locations as required by the NFPA 70. Electrical wiring, motors, and other equipment, outside of but within 20 feet of any spraying area, shall not spark and shall conform to the provisions for Class I, Division 2, Group D, hazardous locations. Electric motors used to drive exhaust fans shall not be placed inside spraying areas or ducts. Fan blades and portable air ducts shall be constructed of nonferrous materials. Motors and associated control equipment shall be properly maintained and grounded. The metallic parts of air-moving devices, spray guns, connecting tubing, and duct work shall be electrically bonded and the bonded assembly shall be grounded.

1.5.5.3 Further Precautions

a. Workers shall wear nonsparking safety shoes.

b. Solvent drums taken into the spraying area shall be placed on nonferrous surfaces and shall be grounded. Metallic bonding shall be maintained between containers and drums when materials are being transferred.

c. Insulation on all power and lighting cables shall be inspected to ensure that the insulation is in excellent working condition and is free of all cracks and worn spots. Cables shall be further inspected to ensure that no connections are within 50 feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

1.5.5.4 Ignition Sources

Ignition sources, to include lighted cigarettes, cigars, pipes, matches, or cigarette lighters shall be prohibited in area of solvent cleaning, paint storage, paint mixing, or paint application.

1.5.6 Health Protection

1.5.6.1 Air Sampling

The Contractor shall perform air sampling and testing as needed to assure that workers are not exposed to contaminants above the permissible exposure limit. In addition, the Contractor shall provide the Contracting Officer with a copy of the test results from the laboratory within five working days of the sampling date and shall provide results from direct-reading instrumentation on the same day the samples are collected.

1.5.6.2 Respirators

During all spray painting operations, spray painters shall use approved SCBA or SAR (air line) respirators, unless valid air sampling has demonstrated contaminant levels to be consistently within concentrations that are compatible with air-purifying respirator Assigned Protection Factor (APF). Persons with facial hair that interferes with the sealing surface of the facepiece to faceseal or interferes with respirator valve function shall not be allowed to perform work requiring respiratory protection. Air-purifying chemical cartridge/canister half- or full-facepiece respirators that have a particulate prefilter and are suitable for the specific type(s) of gas/vapor and particulate contaminant(s) may be used for nonconfined space painting, mixing, and cleaning (using solvents). These respirators may be used provided the measured or anticipated concentration of the contaminant(s) in the breathing zone of the exposed worker does not exceed the APF for the respirator and the gas/vapor has good warning properties or the respirator assembly is equipped with a NIOSH-approved end of service life indicator for the gas(es)/vapor anticipated or encountered. Where paint contains toxic elements such as lead, cadmium, chromium, or other toxic particulates that may become airborne during painting in nonconfined spaces, air-purifying half- and full-facepiece respirators or powered air-purifying respirators equipped with appropriate gas vapor cartridges, in combination with a high-efficiency filter, or an appropriate canister incorporating a high-efficiency filter, shall be used.

1.5.6.3 Protective Clothing and Equipment

All workers shall wear safety shoes or boots, appropriate gloves to protect against the chemical to be encountered, and breathable, protective, full-body covering during spray-painting applications. Where necessary for emergencies, protective equipment such as life lines, body harnesses, or other means of personnel removal shall be used during confined-space work.

1.6 MEDICAL STATUS

Prior to the start of work and annually thereafter, all Contractor employees working with or around paint systems, thinners, blast media, those required to wear respiratory protective equipment, and those who will be exposed to high noise levels shall be medically evaluated for the particular type of exposure they may encounter. Medical records shall be maintained as required by 29 CFR 1910.20. The evaluation shall include:

a. Audiometric testing and evaluation of employees who will work in a noise environment with a time weighted average greater than or equal to 90 dBA.

b. Vision screening (employees who use full-facepiece respirators shall not wear contact lenses).

c. Medical evaluation shall include, but shall not be limited to, the following:

(1) Medical history including, but not limited to, alcohol use, with emphasis on liver, kidney, and pulmonary systems, and sensitivity to chemicals to be used on the job.

(2) General physical examination with emphasis on liver, kidney, and pulmonary system.

(3) Determination of the employee's physical and psychological ability to wear respiratory protective equipment and to perform job-related tasks.

(4) Determination of baseline values of biological indices for later comparison to changes associated with exposure to paint systems and thinners or blast media, which include: liver function tests to include SGOT, SGPT, GGPT, alkaline phosphates, bilirubin, complete urinalysis, EKG (employees over age 40), blood urea nitrogen (bun), serum creatinine, pulmonary function test, FVC, and FEV, chest x-ray (if medically indicated), blood lead and ZPP (for individuals where it is known there will be an exposure to materials containing lead), other criteria that may be deemed necessary by the Contractor's physician, and Physician's statements for individual employees that medical status would permit specific task performance.

1.7 CHANGE IN MEDICAL STATUS

Any employee whose medical status has changed negatively due to work related chemical and/or physical agent exposure while working with or around paint systems and thinners, blast media, or other chemicals shall be evaluated by a physician, and the Contractor shall obtain a physicians statement as described in paragraph MEDICAL STATUS prior to allowing the employee to return to those work tasks. The Contractor shall notify the Contracting Officer in writing of any negative changes in employee medical status and the results of the physicians reevaluation statement.

1.8 ENVIRONMENTAL PROTECTION

In addition to the requirements of Section 01355 ENVIRONMENTAL PROTECTION the Contractor shall comply with the following environmental protection criteria.

1.8.1 Waste Classification, Handling, and Disposal

The Contractor shall be responsible for assuring the proper disposal of all hazardous and nonhazardous waste generated during the project. Nonhazardous waste shall be stored in closed containers separate from hazardous waste storage areas. All nonhazardous waste shall be transported in accordance with local regulations regarding waste transportation. Although full containment of blast debris is not required, the cleaning operation shall be conducted in a manner to permit the collection of the blast debris for proper disposal. Collected blast debris shall be disposed of off site in accordance with Federal, State and local regulations. ~~All blast debris shall be collected and disposed of off site in accordance with Federal, State and local regulations.~~

1.9 PAINT PACKAGING, DELIVERY, AND STORAGE

Paints shall be processed and packaged to ensure that within a period of one year from date of manufacture, they will not gel, liver, or thicken deleteriously, or form gas in the closed container. Paints, unless otherwise specified or permitted, shall be packaged in standard containers not larger than 5 gallons, with removable friction or lug-type covers. Each container of paint or separately packaged component thereof shall be labeled to indicate the purchaser's order number, date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name, and formula or specification number of the paint together with special labeling instructions, when specified. Paint shall be delivered to the job in unbroken containers. Paints that can be harmed by exposure to cold weather shall be stored in ventilated, heated shelters. All paints shall be stored under cover from the elements and in locations free from sparks and flames.

PART 2 PRODUCTS

2.1 SPECIAL PAINT FORMULAS

Special paints shall have the composition as indicated in the formulas listed herein. Where so specified, certain components of a paint formulation shall be packaged in separate containers for mixing on the job. If not specified or otherwise prescribed, the color shall be that

naturally obtained from the required pigmentation.

2.2 PAINT FORMULATIONS

Special paint formulas shall comply with the following:

2.2.1 Formula C-200a, Coal Tar-Epoxy (Black) Paint

The paint shall conform to SSPC Paint 16 manufactured with Type 1 pitch. In addition to standard labeling, container labels shall include the term, Corps of Engineers Formula C-200a.

2.2.2 Underwater Coating Product

Underwater paint shall be "Hycote 151" (Black) manufactured and distributed by Somay Products, Inc., 4301 N.W. 35th Avenue, Miami, Florida 33142-4382,
Technical Service: (305) 633-6333
Customer Orders: (888) 2-4-SOMAY
Fax: (305) 638-5524
E-Mail:paint@somay.com.

The underwater paint is a two-component, polyamine-cured epoxy coating.

PART 3 EXECUTION

3.1 CLEANING SURVEYS

Before surface preparation begins on any given area of the sector gates, the Contractor shall make a complete and thorough examination of all surfaces of the gates, including underwater surveys as specified, to determine the location and extent of corrosion and paint failure visually evident. This survey shall be conducted in the presence of the Contracting Officer Representative at the site. The surveys shall be performed by using hand tools, power tools, and chipping hammers on suspect areas located by a close-up visual examination of every surface of every member. The approximate limits of paint failure and corrosion areas located by the surveys, which are not visually obvious, shall be delineated by chalk or spray paint lines. Following the cleaning surveys, all paint failure and corrosion locations shall be power tool cleaned or blast cleaned as specified in paragraph "Surface Preparation" below. See also Article GENERAL REQUIREMENTS.

3.2 CLEANING AND PREPARATION OF SURFACES TO BE PAINTED

3.2.1 General Requirements

The intent of the cleaning operations is to remove all corrosion and all paint which shows evidence of corrosion including blistering, peeling, cracking, brittleness or general disintegration. It is not intended that sound, adherent old paint be removed unless it is excessively thick or inflexible. When cleaning, the removal of existing paint shall be expanded until an area of completely intact, firm and adhering paint film is attained. The edges of remaining tight paint film shall be feathered out, using power tools if necessary, so that the surface will have a smooth

appearance when repainted. Any remaining paint in a cleaned area shall have sufficient adhesion so that it cannot be lifted as a layer by inserting the blade of a dull putty knife under it. Due to varying degrees of corrosion at different locations on the gate structures, the rate and degree of cleaning shall be varied from one area to the next in order to achieve the desired end condition. The majority of coating failure on the gates has occurred at the crevices and joints of built-up members; such areas are difficult to clean. Meticulous surface preparation to the specified grade in those difficult areas is a contract requirement and will be strictly enforced. The Contractor shall "dwell" on those excessively corroded areas which require special attention. Gratings shall be removed as necessary to properly clean and paint supporting steel. Most areas identified by the cleaning survey for surface preparation will require extensive cleaning to achieve the specified grade of surface preparation. A cleaning system shall be established by the Contractor whereby he can mobilize and properly clean any member at any location on each gate structure.

Surfaces to be painted shall be cleaned before applying paint or surface treatments. Deposits of grease or oil shall be removed in accordance with SSPC SP 1, prior to mechanical cleaning. Solvent cleaning shall be accomplished with mineral spirits or other low toxicity solvents having a flash point above 100 degrees F. Clean cloths and clean fluids shall be used to avoid leaving a thin film of greasy residue on the surfaces being cleaned. Items not to be prepared or coated shall be protected from damage by the surface preparation methods. Machinery shall be protected against entry of blast abrasive and dust into working parts. Cleaning and painting shall be so programmed that dust or other contaminants from the cleaning process do not fall on wet, newly painted surfaces, and surfaces not intended to be painted shall be suitably protected from the effects of cleaning and painting operations. Welding of, or in the vicinity of, previously painted surfaces shall be conducted in a manner to prevent weld spatter from striking the paint and to otherwise reduce coating damage to a minimum; paint damaged by welding operations shall be restored to original condition. Surfaces to be painted that will be inaccessible after construction, erection, or installation operations are completed shall be painted before they become inaccessible.

3.2.2 Ferrous Surfaces Within the Dewatered Gate Pockets

a. All paint failure areas including bare metal areas, rust spots, paint blisters, areas of underfilm corrosion and any surface areas where the existing paint system has otherwise thinned out or failed shall be cleaned by means dry blasting to a commercial grade. Power tool cleaning to a commercial grade will be permitted for areas that are inaccessible to dry blasting, as approved by the Contracting Officer. Power tool cleaning shall conform to the requirements of SSPC SP 3. Commercial blast cleaning shall conform to the requirements of SSPC SP 6. Welds and adjoining surfaces of new ferrous metal items to be installed in the work shall be cleaned of weld flux, spatter, and other harmful deposits by blasting, power impact tools, power wire brush, or such combination of these and other methods as may be necessary for complete removal of each type of deposit. All surfaces shall be primed as soon as practicable after cleaning but prior to contamination or deterioration of the prepared

surfaces. Cleaning and priming of new ferrous metal items to be installed in the work shall be done in the shop unless otherwise directed or permitted.

b Intact existing paint areas surrounding the bare metal areas for a minimum distance of 4 inches shall be prepared to receive paint by dry blasting and power tool cleaning. The blast stream or cleaning tool shall dwell upon these intact paint areas for a time sufficient to feather out the existing coating and roughen the existing paint surface.

3.2.3 Ferrous Surfaces To be Cleaned and Painted Underwater

a. The welds of the new underwater fender brackets shall be cleaned and painted underwater as specified in this section. All paint failure areas identified by the cleaning survey including bare metal areas, rust spots, paint blisters, areas of underfilm corrosion and any surface areas where the existing paint system has otherwise thinned out or failed shall be cleaned to receive underwater paint. Underwater cleaning shall be performed by ultra high pressure water blasting, in excess of 15,000 psi and with injection of 30 mesh sand. Power tools shall be used as necessary to feather out the existing coating. Underwater cleaning shall be carried out by water blasting, power impact tools, power wire brush, or such combination of these and other methods as may be necessary for complete removal of failed paint and corrosion. Power tool cleaning shall conform to the requirements of SSPC SP 3. All surfaces shall be underwater painted as soon as practicable after cleaning but prior to contamination or deterioration of the prepared surfaces.

b Intact existing paint areas surrounding the bare metal areas for a minimum distance of 4 inches shall be prepared to receive underwater paint by waterblasting or power tool cleaning. The cleaning tool shall dwell upon these intact paint areas for a time sufficient to feather out the existing coating and roughen the existing paint surface.

3.2.4 New Ferrous Items

New fabricated Ferrous surfaces shall be dry blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be 1.5 to 2.5 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used to produce the desired surface profile and to give an angular anchor tooth pattern. If recycled blast media is used, an appropriate particle size distribution shall be maintained so that the specified profile is consistently obtained. Steel shot or other abrasives that do not produce an angular profile shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be dry at the time of blasting. Within 8 hours after cleaning, prior to the deposition of any detectable moisture, contaminants, or corrosion, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of dust and abrasive particles by brush, vacuum cleaner, and/or blown down with clean, dry, compressed air, and given the first coat of paint. New ferrous metal items may be mill or shop cleaned. The surfaces, if shop blasted, shall be shop coated with the first and second coats of the specified paint system except that the epoxy zinc-rich primed surfaces shall receive an extra single spray coat of the

zinc primer at the time field painting is started, as specified in the paint system instructions. The shop coating shall be maintained in good condition by cleaning and touching up of areas damaged during the construction period. If pinpoint or general rusting appears, surfaces shall be reblasted and repainted at no added cost to the Government. Prior to the field application of subsequent coats, soiled areas of the shop coating shall be thoroughly cleaned and all welds or other unpainted or damaged areas shall be cleaned and coated in a manner to make them equivalent to adjacent, undamaged paint surfaces.

3.3 PAINT APPLICATION

3.3.1 Cleaning and Surface Preparation

Surfaces to be painted shall be cleaned and prepared before applying paint. New steel items shall be blast cleaned to the Near-White Metal grade in accordance with the Steel Structures Painting Council (SSPC) SP-5. Underwater surface shall be ultra high pressure waterblasted and power tool cleaned. Surfaces where the existing finish is damaged to exposed metal and surfaces that have been heated for straightening shall be prepared for painting by the following method:

(1) Intact paint areas surrounding the bare metal areas cleaned to the Commercial grade shall be brush-off blast cleaned or power tool cleaned for a minimum of 4 inches. The blast stream or cleaning tool shall dwell upon these intact paint areas for a time sufficient to feather out the edges, remove surface soils and roughen the paint surface.

(2) Prime all exposed bare metal surfaces with the zinc rich epoxy paint, being careful not to overlap onto existing intact coal-tar epoxy surfaces.

(4) Soften the roughened surface of the intact coal-tar-epoxy coating by wiping it with cloths dampened with 1-methyl-2-pyrrolidone. The solvent may be applied to the surface by fog spraying followed by wiping, but any puddles of solvent must be mopped up immediately after they form. Paint shall be applied in not less than 15 minutes or more than 3 hours after the solvent treatment. Coal-tar-epoxy paint shall not be applied to any existing painted surface that has not been thoroughly roughened by brush-off blast cleaning or power tool cleaning and softened with solvent.

3.3.2 General Application Requirements

The finished coating shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, excessive or unsightly brush marks, and variations in color, texture, and gloss. Application of initial or subsequent coatings shall not commence until the Contracting Officer has verified that atmospheric conditions and the surfaces to be coated are satisfactory. Each paint coat shall be applied in a manner that will produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, rivets, corrosion pits, and other surface irregularities shall receive special attention to ensure that they receive

an adequate thickness of paint. Spray equipment shall be equipped with traps and separators and where appropriate, mechanical agitators, pressure gauges, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment manufacturer for the material being applied. Airless-type spray equipment may be used only on broad, flat, or otherwise simply configured surfaces, except that it may be employed for general painting if the spray gun is equipped with dual or adjustable tips of proper types and orifice sizes. Airless-type equipment shall not be used for the application of vinyl paints.

3.3.3 Mixing and Thinning

Paints shall be thoroughly mixed, strained where necessary, and kept at a uniform composition and consistency during application. Paste or dry-powder pigments specified to be added at the time of use shall, with the aid of powered stirrers, be incorporated into the vehicle or base paint in a manner that will produce a smooth, homogeneous mixture free of lumps and dry particles. Where necessary to suit conditions of the surface temperature, weather, and method of application, the paint may be thinned immediately prior to use. Thinning shall generally be limited to the addition of not more than 1 pint per gallon of the proper thinner; this general limitation shall not apply when more specific thinning instructions are provided. Paint that has been stored at low temperature, shall be brought up to at least 70 degrees F before being mixed and thinned, and its temperature in the spray tank or other working container shall not fall below 60 degrees F during the application. Paint that has deteriorated in any manner to a degree that it cannot be restored to essentially its original condition by customary field-mixing methods shall not be used and shall be removed from the project site. Paint and thinner that is more than 1 year old shall be removed from the site and replaced with materials less than 1 year old.

3.3.4 Atmospheric and Surface Conditions

Paint shall be applied only to surfaces that are above the dew point temperature and that are completely free of moisture as determined by sight and touch. Paint shall not be applied to surfaces upon which there is detectable frost or ice. Except as otherwise specified, the temperature of the surfaces to be painted and of air in contact therewith shall be not less than 45 degrees F during paint application nor shall paint be applied if the surfaces can be expected to drop to 32 degrees F or lower before the film has dried to a reasonably firm condition. During periods of inclement weather, painting may be continued by enclosing the surfaces and applying artificial heat, provided the minimum temperatures and surface dryness requirements prescribed previously are maintained. Paint shall not be applied to surfaces heated by direct sunlight or other sources to temperatures that will cause detrimental blistering, pinholing, or porosity of the film.

3.3.5 Time Between Surface Preparation and Painting

Surfaces that have been cleaned and/or otherwise prepared for painting shall be primed as soon as practicable after such preparation has been completed but, in any event, prior to any deterioration of the prepared

surface.

3.3.6 Method of Paint Application

Unless otherwise specified, paint shall be applied by brush or spray to ferrous and nonferrous metal surfaces. Special attention shall be directed toward ensuring adequate coverage of edges, corners, crevices, pits, rivets, bolts, welds, and similar surface irregularities. Other methods of application to metal surfaces shall be subject to the specific approval of the Contracting Officer. Paint on plaster, concrete, or other nonmetallic surfaces shall be applied by brush, roller, and/or spray.

3.3.7 Coverage and Film Thickness

Film thickness or spreading rates shall be as specified hereinafter. Where no spreading rate is specified, the paint shall be applied at a rate normal for the type of material being used. In any event, the combined coats of a specified paint system shall completely hide base surface and the finish coats shall completely hide undercoats of dissimilar color.

3.3.7.1 Measurement on Ferrous Metal

Where dry film thickness requirements are specified for coatings on ferrous surfaces, measurements shall be made with a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1186. They shall be calibrated using plastic shims with metal practically identical in composition and surface preparation to that being coated, and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch). Frequency of measurements shall be as recommended for field measurements by ASTM D 1186 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.3.8 Progress of Painting Work

Where field painting on any type of surface has commenced, the complete painting operation, including priming and finishing coats, on that portion of the work shall be completed as soon as practicable, without prolonged delays. Sufficient time shall elapse between successive coats to permit them to dry properly for recoating, and this period shall be modified as necessary to suit adverse weather conditions. Paint shall be considered dry for recoating when it feels firm, does not deform or feel sticky under moderate pressure of the finger, and the application of another coat of paint does not cause film irregularities such as lifting or loss of adhesion of the undercoat. All coats of all painted surfaces shall be unscarred and completely integral at the time of application of succeeding coats. At the time of application of each successive coat, undercoats shall be cleaned of dust, grease, overspray, or foreign matter by means of airblast, solvent cleaning, or other suitable means. Cement and mortar deposits on painted steel surfaces, not satisfactorily removed by ordinary cleaning methods, shall be brush-off blast cleaned and completely repainted as required. Undercoats of high gloss shall, if necessary for

establishment of good adhesion, be scuff sanded, solvent wiped, or otherwise treated prior to application of a succeeding coat. Field coats on metal shall be applied after erection except as otherwise specified and except for surfaces to be painted that will become inaccessible after erection.

3.3.9 Drying Time Prior to Immersion

Minimum drying periods for epoxy systems after final coat prior to immersion shall at least 5 days.

3.3.10 Protection of Painted Surfaces

Where shelter and/or heat are provided for painted surfaces during inclement weather, such protective measures shall be maintained until the paint film has dried and discontinuance of the measures is authorized. Items that have been painted shall not be handled, worked on, or otherwise disturbed until the paint coat is fully dry and hard. All metalwork coated in the shop or field prior to final erection shall be stored out of contact with the ground in a manner and location that will minimize the formation of water-holding pockets; soiling, contamination, and deterioration of the paint film, and damaged areas of paint on such metalwork shall be cleaned and touched up without delay. The first field coat of paint shall be applied within a reasonable period of time after the shop coat and in any event before weathering of the shop coat becomes extensive.

3.3.11 Coal Tar-Epoxy (Black) Paint (Formula C-200a)

3.3.11.1 Mixing

Component B shall be added to previously stirred Component A and thoroughly mixed together with a heavy-duty mechanical stirrer just prior to use. The use of not more than 1 pint of xylene thinner per 1 gallon of paint will be permitted to improve application properties and extend pot life. The pot life of the mixed paint, extended by permissible thinning, may vary from 2 hours in very warm weather to 5 or more hours in cool weather. Pot life in warm weather may be extended by precooling the components prior to mixing; cooling the mixed material; and/or by slow, continuous stirring during the application period. The mixed material shall be applied before an unreasonable increases in viscosity takes place.

3.3.11.2 Application

Spray guns shall be of the conventional type equipped with a fluid tip of approximately 0.09 inch in diameter and external atomization, seven-hole air cap. Material shall be supplied to the spray gun from a bottom withdrawal pot or by means of a fluid pump; hose shall be 1/2 inch in diameter. Atomization air pressure shall not be less than 80 psi. High-pressure airless spray equipment may be used only on broad, simply configured surfaces. Brush application shall be with a stiff-bristled tool heavily laden with material and wielded in a manner to spread the coating smoothly and quickly without excessive brushing. The coverage rate of the material is approximately 110 square feet per gallon per coat to obtain 20 mils (dry thickness) in a two-coat system. The paint shall flow together

and provide a coherent, pinhole-free film. The direction of the spray passes (or finish strokes if brushed) of the second coat shall be at right angles to those of the first where practicable.

3.3.11.3 Subsequent Coats

Except at the high temperatures discussed later in this paragraph, the drying time between coal tar-epoxy coats shall not be more than 72 hours, and application of a subsequent coat as soon as the undercoat is reasonably firm is strongly encouraged. Where the temperature for substrate or coating surfaces during application or curing exceeds or can be expected to exceed 125 degrees F as the result of direct exposure to sunlight, the surfaces shall be shaded by overhead cover or the interval between coats shall be reduced as may be found necessary to avoid poor intercoat adhesion. Here, poor intercoat adhesion is defined as the inability of two or more dried coats of coal tar-epoxy paint to resist delamination when tested aggressively with a sharp knife. Under the most extreme conditions involving high ambient temperatures and sun-exposed surfaces, the drying time between coats shall not exceed 10 hours, and the reduction of this interval to a few hours or less is strongly encouraged. Where the curing time of a coal tar-epoxy undercoat exceeds 72 hours of curing at normal temperatures, 10 hours at extreme conditions, or where the undercoat develops a heavy blush, it shall be given one of the following treatments before the subsequent coat is applied:

a. Etch the coating surface lightly by brush-off blasting, using fine sand, low air pressure, and a nozzle-to-surface distance of approximately 3 feet.

b. Remove the blush and/or soften the surface of the coating by wiping it with cloths dampened with 1-methyl-2-pyrrolidone. The solvents may be applied to the surface by fog spraying followed by wiping, but any puddles of solvent must be mopped up immediately after they form. The subsequent coat shall be applied in not less than 15 minutes or more than 3 hours after the solvent treatment.

3.3.11.4 Ambient Temperature

Coal tar-epoxy paint shall not be applied when the receiving surface or the ambient air is below 50 degrees F nor unless it can be reasonably anticipated that the average ambient temperature will be 50 degrees F or higher for the 5-day period subsequent to the application of any coat.

3.3.11.5 Safety

In addition to the safety provisions in paragraph SAFETY AND HEALTH PROVISIONS, other workmen as well as painters shall avoid inhaling atomized particles of coal tar-epoxy paint and contact of the paint with the skin.

3.3.12 Underwater Paint Application

Underwater paint shall be applied to waterblasted steel surfaces by paint brush, paint roller, by power brush or power roller, as recommended by the coating manufacturer.

3.3.12.1 Safety

Underwater paint contains epoxy resins and curing agents which are potential irritants to the skin and respiratory system. Manufacturer's directions and recommendations for occupational health protection shall be carefully followed. Material safety data sheets shall be obtained from the coating manufacturer.

3.4 PAINT SYSTEMS APPLICATION

The required paint systems and the surfaces to which they shall be applied are shown in this paragraph, and/or in the drawings. Supplementary information follows.

3.4.1 Surface Preparation

The method of surface preparation and pretreatment shown in the tabulation of paint systems is for identification purposes only. Cleaning and pretreatment of surfaces prior to painting shall be accomplished in accordance with detailed requirements previously described.

3.4.2 System No. 6-A-Z

b. Epoxy zinc-rich primer 19B shall be applied to the bare metal areas in accordance with the manufacturer's directions in a single, half-lapped spray coat or by brush to an average dry film thickness of a minimum of 3.0 mils. The thickness at any point shall not be less than 2.5 mils or greater 8 mils for the primer. After a minimum drying period of 6 hours and no more than 96 hours, at least two coats of coal tar epoxy paint shall be applied to the primed areas with a 4 inch overlap onto the existing roughened and softened coal tar-epoxy paint to provide a minimum thickness at any point of 16 mils for the completed system. If the epoxy zinc-rich paint has been applied in the shop or otherwise has been permitted to cure for longer than 96 hours, it shall be abraded and recoated with an additional thin tack coat of the zinc-rich paint, which in turn shall be overcoated within 96 hours with the first coat of coal tar-epoxy paint. The specified film thicknesses shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government.

3.4.3 Underwater Paint

"Hycote 151" underwater paint shall be applied in accordance with the manufacturer's directions in a single coat to an average dry film thickness of a minimum of 30.0 mils. The thickness at any point shall not be less than 20.0 mils or greater 40.0 mils. The specified film thicknesses shall be attained, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government.

3.4.4 Protection of Nonpainted Items and Cleanup

Walls, equipment, fixtures and all other items in the vicinity of the surfaces being painted shall be maintained free from damage by paint or

painting activities. Paint spillage and painting activity damage shall be promptly repaired.

3.5 INSPECTION

The Contractor shall inspect, document, and report all work phases and operations on a daily basis. As a minimum the daily report shall contain the following:

a. Inspections performed, including the area of the structure involved and the results of the inspection.

b. Surface preparation operations performed, including the area of the structure involved, the mode of preparation, the kinds of solvent, abrasive, or power tools employed, and whether contract requirements were met.

c. Thinning operations performed, including thinners used, batch numbers, and thinner/paint volume ratios.

d. Application operations performed, including the area of the structure involved, mode of application employed, ambient temperature, substrate temperature, dew point, relative humidity, type of paint with batch numbers, elapsed time between surface preparation and application, elapsed time for recoat, condition of underlying coat, number of coats applied, and if specified, measured dry film thickness or spreading rate of each new coating.

3.6 PAINTING SCHEDULES

SYSTEM NO. 6-A-Z

Items or surfaces to be coated include all paint failure areas identified by the specified cleaning survey.

SURFACE PREPARATION	1st & 2nd COAT	3rd COAT	4th COAT
Commercial blast cleaning	MIL-DTL-24441 /19B	Coal tar-epoxy C-200a (black)	Coal tar-epoxy C-200a (black)

UNDERWATER PAINTING SYSTEM

Items or surfaces to be coated include all underwater paint failure areas identified by the specified cleaning survey.

SURFACE PREPARATION	1st COAT
Commercial blast cleaning	Hycote 151 Black

-- End of Section --